

214 PERMEABLE BASE

214.01 DESCRIPTION

This work shall consist of constructing a permeable asphalt base or permeable concrete base on a prepared sub grade in accordance with these specifications and in conformity with the lines, grades, thicknesses and typical sections shown in the contract plans or as directed by the Chief Engineer.

The permeable asphalt base shall consist of a mixture of aggregate, polymer modified asphalt cement and approved anti-strip additive. The permeable concrete base shall consist of a mixture of aggregate, Portland Cement, admixtures and water.

214.02 MATERIALS

(A) **AGGREGATES.** The aggregates for both the permeable asphalt base and the permeable concrete base shall be 100 percent crushed stone per ASTM C 33, Grading Size No. 57.

(B) **ASPHALT.** The asphalt for asphalt treated permeable base shall be an approved polymer modified asphalt cement complying with [802.09](#). The percentage of asphalt cement shall be 2.0 percent to 4.0 percent by weight (mass) of the total mixture. Asphalt cement content and mixing process shall be such that all aggregates are visibly coated. Qualification samples shall be tested and the mixture shall retain a minimum of 90 percent coating when tested in accordance with an approved stripping test and anti-strip additive.

A job mix formula shall be submitted and approved in accordance with [Section 400](#).

(C) **ANTI-STRIP ADDITIVE.** The anti-strip additive shall be added at the minimum rate of 0.5 percent by weight of asphalt cement and shall be thoroughly mixed with the asphalt cement at the plant. Additional anti-strip additive may be added up to 1.2 percent by weight (mass).

The proposed job mix formula shall indicate a single anti-strip additive rate that is 0.1 percent greater than the percentage that will yield a minimum of 90 percent coating when tested. The approved range shall be 0.2 percent by weight (mass) of asphalt, with the lower limit being the quantity determined during testing and the maximum limit not to exceed 1.2 percent by weight (mass) of asphalt.

(D) **PERMEABLE PORTLAND CEMENT CONCRETE.** Cement for permeable concrete base shall be a Type I or Type I(B) Portland Cement complying with [Section 500](#).

Permeable concrete base shall have a minimum cement content of 235 pounds of Portland Cement per cubic yard (140 kg/cu m) of concrete. The water cement ratio of the mixture shall be not more than 0.37.

(E) **ADMIXTURES.** Admixtures for the permeable concrete base shall comply with [814](#). The rate shall be as approved by the Engineer.

214.03 CONSTRUCTION REQUIREMENTS

- (A) **PERMEABLE ASPHALT BASE.** The permeable asphalt base shall be placed in accordance with [Section 400](#). Compaction shall be with one to three passes of a 5 to 10 ton smooth steel wheel roller conforming to [Section 902](#). Permeable asphalt base shall be placed at a temperature between 200°F to 260°F (90°C to 125°C) when measured in the hopper of the paving machine. Compaction shall begin when the temperature of the permeable asphalt base has cooled to approximately 160°F (70°C) and shall be completed before the temperature falls below 100°F (35°C).
- (B) **PERMEABLE OCNCRETE BASE.** The permeable concrete base shall be placed in accordance with [Section 501](#) or by an asphaltic concrete paver in accordance with [Section 902](#). Compaction shall be performed by using vibrating screeds or plates as directed. No construction joints will be required. Immediately after concrete placement, the permeable concrete base shall be cured by covering the entire surface and exposed edges with white-pigmented curing compound in accordance with [Subsection 501.17](#).

214.04 PROTECTION

The Contractor shall protect the permeable asphalt base and permeable concrete base from severe weather conditions and contamination by dust, dirt, mud or other fine grained material. The base shall be protected by an approved method from the time of placement until placement of the following pavement layer. No traffic will be permitted on the permeable asphalt base or permeable concrete base. Equipment required to place the pavement will be allowed provided that it enters and exits as near as possible to the paving operation. Any damage to the permeable bases caused by the contractor's equipment shall be repaired by the contractor at no expense to the District. Any portion of the permeable bases that become contaminated to the extent that drainage is reduced or inhibited shall be removed and replaced at no expense to the District. The permeable bases shall be covered with the pavement within 15 working days after placement.

214.05 TOLERANCES

The finished surface of permeable asphalt base and permeable concrete base shall be uniform and shall not vary at any point more than 0.05 foot above or below the established grade. The cross-slope shall not vary by more than ± 0.003 ft/ft. Permeable asphalt base or permeable concrete base with a surface higher than 0.05 foot above the established grade shall be removed and replaced with permeable base that complies with these specifications, or when permitted, the high spots may be removed to within specified tolerance by any method that does not produce contaminating fines nor damage the base to remain in place. Grinding will not be permitted. Permeable base with a surface lower than 0.05 foot below the established grade shall be removed and replaced with permeable base that complies with these specifications. When permitted, low areas not exceeding 1 inch shall be filled with pavement at the time and in the same operation in which the pavement is placed at no cost to the District.

214.06 TESTING

Before placing surfacing, the contractor shall core the permeable bases at the locations determined by the Chief Engineer. All cores taken by the contractor shall be given to the Chief Engineer for verification of base thickness.

214.07 MEASURE AND PAYMENT.

Permeable asphalt base and permeable concrete base will be measured by the square yard from the design quantities shown on the plans. Design quantities will be adjusted if the engineer makes changes to adjust to field conditions, if plan errors are proven or if design changes are necessary. Design areas of permeable base are based on the horizontal dimensions shown on the plans, the length being along the centerline of the base.

Payment for permeable asphalt base and permeable concrete base will be made at the contract unit price per square yard, which payment will include all labor, tools, equipment and incidentals required to complete the specified work.